

Monitoring of FR Cnc Flaring Activity

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Being excited by the detection of the first ever-observed optical flare in FR Cnc, we decided to continue photometrical monitoring of this object. The observations were carried out at Crimean Astrophysical Observatory (Crimea, Ukraine; CrAO - hereafter) and at the Terskol Observatory (Russia, Northern Caucasus). The obtained lightcurves are presented and discussed. No distinguishable flares were detected that could imply that flares on FR Cnc are very rare event.

Introduction

FR Cnc is a BY Dra type star, showing its light variations (0^m17), caused, as assumed, by the presence of star-spots and axial rotation [3, 4, 5].

Very recently Golovin, A., Pavlenko, E., Kuznyetsova, Yu. and Krushevskaya, V. [2] detected the first ever-observed large optical flare (1^m02 in B-band, 0^m49 - V-band, 0^m21 - R-band, 0^m14 - I-band) at CrAO.

FR Cnc has unusually short (for such class of objects) rotational period of $0.^d8267$. As it was shown in [1], short rotational period allow to expect large flare activity in the star.

In the aim to detect other flares in this object, we decided to continue photometrical monitoring of FR Cnc.

Observations

Observations were carried out by the authors at CrAO during 4 nights on November, 2006 with the help of 38-cm Cassegrain telescope and SBIG ST-9 CCD camera, as well as in Terskol Observatory during 7 nights in March, 2007 using 0.29-m telescope and Apogee-47 Alta CCD camera (see Table 1 for log of observations). All observations were done in B-band as far as the flare amplitude is increasing with decreasing of the wavelength. The duration of each observational run varies from 2 to 7 hours. Calibration process of the obtained frames, comparison and check stars are remain the same as described in [2].

The obtained lightcurve during the course of FR Cnc monitoring in March, 2007, folded with FR Cnc rotational period of 0.8267 days, is shown in Fig. 1.

As it is clearly seen, one-humped 0^m17 variations with the rotational period are clearly distinguishable, while no flares were detected that could imply that flares is a rare event for FR Cnc and makes this object even more interesting for follow-up observations. Taking into account large amplitude of the flares in short wavelengths, B-band would be recommended, nevertheless, multicolour CCD photometry is highly valuable as well.

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Table 1. Log of Observations

Beginning of the Run (HJD)	End of the Run (HJD)	Observatory	Remarks
2454062.5102	2454062.6133	CrAO	
2454065.4893	2454065.5540	CrAO	
2454067.4628	2454067.5623	CrAO	
2454069.5012	2454069.5440	CrAO	
2454171.2453	2454171.4361	Terskol	
2454174.3501	2454174.4019	Terskol	
2454179.4266	2454179.4571	Terskol	Data excluded due to big scatter
2454180.1863	2454180.4691	Terskol	
2454181.19303	2454181.3536	Terskol	Data excluded due to big scatter
2454182.2395	2454182.4972	Terskol	
2454188.4424	2454188.4721	Terskol	

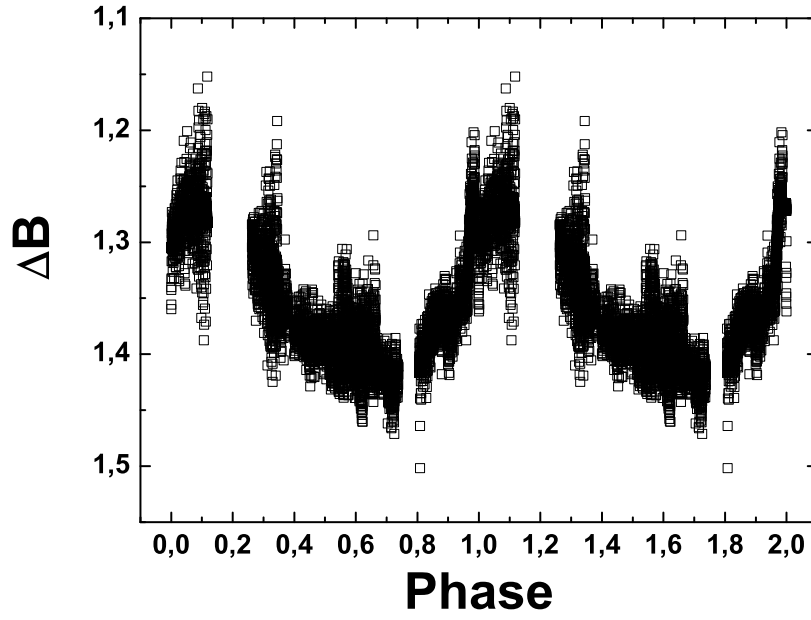


Figure 1: Phase Lightcurve of FR Cnc.

References

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